

# ITPASS 医よ膊紘膺茯臥

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導認.

箏 蟹  $m_1$  蟹  $m_2$

f 鏡 箏 腴ら合縹

$$m_1 \cdot \frac{d^2 \mathbf{r}_1}{dt^2} = -\frac{Gm_1 m_2}{|\mathbf{r}_1 - \mathbf{r}_2|^2} \cdot \frac{\mathbf{r}_1 - \mathbf{r}_2}{|\mathbf{r}_1 - \mathbf{r}_2|} \quad (1)$$

$$m_2 \cdot \frac{d^2 \mathbf{r}_2}{dt^2} = -\frac{Gm_1 m_2}{|\mathbf{r}_2 - \mathbf{r}_1|^2} \cdot \frac{\mathbf{r}_2 - \mathbf{r}_1}{|\mathbf{r}_2 - \mathbf{r}_1|} \quad (2)$$

$\mathbf{r} = \mathbf{r}_2 - \mathbf{r}_1$  ; 後 (1),(2) 縹

$$m_1 \cdot \frac{d^2 \mathbf{r}_1}{dt^2} = \frac{Gm_1 m_2}{r^3} \cdot \mathbf{r} \quad (3)$$

$$m_2 \cdot \frac{d^2 \mathbf{r}_2}{dt^2} = -\frac{Gm_1 m_2}{r^3} \cdot \mathbf{r} \quad (4)$$

(3),(4) 縹

$$\frac{d^2}{dt^2}(\mathbf{r}_2 - \mathbf{r}_1) = -\frac{G(m_1 + m_2)}{r^3} \cdot \mathbf{r} \quad (5)$$

障後 (5) 縹素縹

$$\frac{d^2 \mathbf{r}}{dt^2} = -\frac{G(m_1 + m_2)}{r^3} \cdot \mathbf{r} \quad (6)$$

(6) 縹 箏 荀 賢綽 茵

導認

膺  $G = 1$   $m_1 + m_2 = 1$  箏膺祉

後  $\mathbf{r} \equiv (x, y)$   $\bar{\lambda} |\mathbf{r}| = \sqrt{x^2 + y^2}$

(6) 縹  $x, y$  茹 c

$$\frac{d^2 x}{dt^2} = -\frac{1}{\sqrt{(x^2 + y^2)^3}} \cdot x \quad (7)$$

$$\frac{d^2y}{dt^2} = -\frac{1}{\sqrt{(x^2 + y^2)^3}} \cdot y \quad (8)$$

賢綽苟 綺  $\mathbf{v}$

$$\mathbf{v} \equiv (v_x, v_y) = \left( \frac{dx}{dt}, \frac{dy}{dt} \right)$$

臂 (7),(8) 繼  $\frac{dv_x}{dt}, \frac{dv_y}{dt}$

$$\frac{dv_x}{dt} = \frac{d^2x}{dt^2} = -\frac{x}{\sqrt{(x^2 + y^2)^3}}$$

$$\frac{dv_y}{dt} = \frac{d^2y}{dt^2} = -\frac{y}{\sqrt{(x^2 + y^2)^3}}$$

$$\frac{dv_x}{dt} \quad \frac{dv_y}{dt} \quad x, y \quad ;$$